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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,107	11/18/2003	Junichiro Hara	062709-0117	3998
22428	7590	01/09/2006	EXAMINER	
FOLEY AND LARDNER LLP			EDWARDS, LOREN CHARLES	
SUITE 500			ART UNIT	PAPER NUMBER
3000 K STREET NW				3748
WASHINGTON, DC 20007			DATE MAILED: 01/09/2006	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/715,107	HARA, JUNICHIRO	
	Examiner	Art Unit	
	Loren C. Edwards	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) _____ is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-13 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 18 November 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/8/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted on 11/18/03 and 4/8/04 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statements.
3. Claim 11 is objected to because of the following informalities: The claim reads "an medium channel". Examiner suggests replacing "an" with "a". Appropriate correction is required.
4. Claim 13 is objected to because of the following informalities: The claim reads "an warmer switching valve". Examiner suggests replacing "an" with "a". Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 4-6 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Claypole et al. (U.S. Pat. No. 6,318,077). Claypole discloses an exhaust-heat recovery system for an engine comprising: a catalytic converter through which exhaust discharged from an engine is passed and in which combustible components in the exhaust are burned through catalysis (Fig. 1, No. 34; Col. 3, Lines 34-38); an exhaust heat exchanger where heat is exchanged between the exhaust having passed through the catalytic converter and a heat-transfer medium having passed through the engine (Fig. 1, No. 38 and 60; Col. 3, Lines 39-41; Col. 3, Lines 63-65); an air conditioner with a heat exchanger for heating where a heating wind is generated by means of the heat exchange between the heat-transfer medium having passed through the exhaust heat exchanger and an air conditioning wind (Col. 4, Lines 46-48); and an engine controller for performing incremental control on the combustible components in the exhaust to be burned in the catalytic converter when the prescribed condition for heating is not satisfied (Fig. 1, No. 80; Col. 4, Lines 42-54).

7. In regards to claim 4, Claypole discloses the exhaust-heat recovery system of claim 1, as described above, and further wherein the condition for heating is specified by a demand for an increase in heating power of the air conditioner (Col. 4, Lines 42-54).

8. In regards to claim 5, Claypole discloses the exhaust-heat recovery system of claim 4, as described above, and further wherein the temperature of the heat transfer medium is measured at a heat transfer medium passage within the exhaust heat exchanger (Fig. 1, No. 74; Col. 3, Lines 53-55).

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9. In regards to claim 6, Claypole discloses the exhaust-heat recovery system according to claim 4, as described above, and further wherein the demand for an increase in heating power of the air conditioner is outputted from the air conditioner on the basis of the difference between a target temperature in the vehicle set by an occupant and an actual temperature in the vehicle (Col. 4, Lines 46-48).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Claypole in view of Grant et al. (U.S. Pat. No. 6,272,850). Claypole discloses the exhaust-heat recovery system according to claim 1, as described above, but fails to specifically discuss the incremental control of the combustible components being such that the amount of unburned hydrocarbon in the exhaust discharged from the engine has increased. Grant discloses a catalytic converter temperature control system that

generates a rich air/fuel ratio to increase the temperature of the catalytic converter (Abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the temperature control system of Grant in the system of Claypole for the advantage of being able to control the temperature of the catalytic device without the additional equipment necessary to inject fuel in to the exhaust track.

13. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Claypole in view of Nozawa et al. (U.S. Pat. No. 6,266,957). Claypole discloses the exhaust-heat recovery system according to claim 1, as described above, but fails to specifically discuss the incremental control on the combustible components being performed when the vehicle is at rest but the engine is still in operation. Nozawa discloses a catalyst activation control system for engines that enables catalyst warm-up when the engine is in park or neutral (Col. 10, Lines 48-65). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the catalyst activation control as taught by Nozawa in the system of Claypole for the advantage of rapid temperature rise to activate the catalyst after cold starts.

14. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Claypole in view of Barroni-Bird et al. (U.S. Pat. No. 5,983,628). Claypole discloses the exhaust-heat recovery system according to claim 4, as described above, but fails to specifically describe the system wherein the exchanged heat quantity in the exhaust heat exchanger is calculated from at least one of the differences between a temperature of the heat-transfer medium at an inlet portion of the exhaust heat exchanger and that at an outlet portion of the exhaust heat exchanger, the difference between a temperature

of the exhaust at an inlet portion of the exhaust heat exchanger and that at an outlet portion of the exhaust heat exchanger, the difference between a volumetric flow rate of the exhaust at an inlet portion of the exhaust heat exchanger and that at an outlet portion of the exhaust heat exchanger, the exhaust volume in the engine, the exhaust temperature in the engine, the amount of fuel used in the engine, and the amount of air used in the engine. Barroni-Bird discloses a system and method for controlling exhaust gas temperatures for increasing catalyst conversion that has temperature sensors located immediately and upstream and downstream of a heat exchanger (Fig. 1, No. 52 and 54). These sensors are used to determine the amount of heat dissipated by the exchanger (Col. 4, Line 40 – Col. 5, Line 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the heat exchanged quantity detection as taught by Barroni-Bird in the system of Claypole for the advantage of being able to control the temperature of the exhaust emissions (Col. 2, Lines 19-31).

15. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Claypole in view of Rim (U.S. Pat. No. 6,739,579). Claypole discloses the exhaust-heat recovery system of claim 1, as described above, but fails to specifically disclose: a bypass channel along which the exhaust having passed through the catalytic converter passes bypassing the exhaust heat exchanger; a main channel along which the exhaust having passed through the catalytic converter passes through the exhaust heat exchanger; and an exhaust channel switching valve for closing either the bypass channel or the main channel. Rim discloses an exhaust valve for combustion engines comprising a bypass channel along which the exhaust having passed through the

catalytic converter passes bypassing the heat exchanger (Fig. 2, No. 28; Col. 3, Lines 1-51); a main channel along which the exhaust having passed through the catalytic converter passes through the exhaust heat exchanger (Fig. 2, No. 34; Col. 3, Lines 1-51); and an exhaust channel switching valve for closing either the bypass channel or the main channel (Fig. 2, No. 10; Col. 3, Lines 1-51). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the bypass valve system of Rim in the system of Claypole for the advantage of being able to throttle the amount of additional heat added to the engine coolant.

16. In regards to claim 9, the modified Claypole of claim 8 discloses the exhaust-heat recovery system according to claim 1, as described above, and further wherein the exhaust discharged from the engine passes sequentially through the catalytic converter, the exhaust heat exchanger and a muffler toward the downstream side of the engine, and then is discharged into the air (Fig. 1, No. 22, 12, 24, and 26; Col. 3, Lines 1-51).

17. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Claypole in view of Tramontini (U.S. Pat. No. 3,223,150). Claypole discloses the exhaust-heat recovery system of claim 1, as described above, but fails to specifically discuss the heat-transfer medium flowing out of the engine, passing sequentially through the exhaust heat exchanger, the heat exchanger for heating the passenger compartment, and returning to the engine. Tramontini discloses a heat exchanger where engine coolant is fed through a heat exchanger in the exhaust track (Fig. 1, No. 40), through a heat exchanger in the passenger compartment (Fig. 1, No. 18), and then returns to the engine (Fig. 1, No. 26). It would have been obvious to one having ordinary skill in the

art at the time the invention was made to utilize the heat exchanger as taught by Tramontini in the system of Claypole for the advantage of shortening the time required to bring the coolant in the system to a sufficient temperature to supply heat to the passenger cabin (Col. 1, Lines 51-56).

18. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Claypole in view of Bennett (U.S. Pat. No. 6,151,891). Claypole discloses the exhaust-heat recovery system according to claim 1, as described above, but fails to fully describe the system comprising an oil warmer for generating the heat exchange between the heat-transfer medium and a transmission lubricant on the downstream side of the heat exchanger for heating. Bennett discloses a heat exchanger for a motor vehicle exhaust that is can be used to heat the transmission oil (Fig. 7; Col 6, Lines 19-28). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the exhaust heat exchange system as taught by Bennett in the system of Claypole for the advantage of rapidly bringing the transmission oil up to nominal operating temperature and to avoid transmission damage.

19. In regards to claim 13, the modified Claypole discloses the exhaust-heat recovery system of claim 12, as described above, and further comprising: a bypass channel along which the heat-transfer medium passes bypassing the oil warmer; a main channel along which the heat-transfer medium passed through the oil warmer; and a warmer switching valve for closing either the bypass channel or the main channel (Fig. 7, 8a, and 8b; Col. 5, Lines 15-30; Col 5, Line 5 – Col. 6, Line 18).

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20. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Claypole in view of Bennett (U.S. Pat. No. 6,151,891). Claypole discloses the exhaust-heat recovery system of claim 1, as described above, but fails to specifically disclose a bypass channel along which the heat-transfer medium is directly delivered bypassing the exhaust heat exchanger from the engine to the heat exchanger for heating; a main channel along which the heat-transfer medium passes through the exhaust heat exchanger; and a medium channel switching valve for closing either the bypass channel or the main channel. Bennett discloses a heat exchanger for a motor vehicle exhaust that heats transmission oil and has the ability to bypass this circuit so that no heat is exchanged with the transmission oil (Fig. 7, 8a, and 8b; Col. 5, Lines 15-30; Col 5, Line 5 – Col. 6, Line 18). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the bypass circuit as taught by Bennett in the system of Claypole, for the advantage of being able to more precisely control the cabin heat source.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Weiss et al. (U.S. Pat. No. 3,779,307); Beauvais et al. (U.S. Pat. No. 4,146,176); Padgaonkar (U.S. Pat. No. 4,884,744); Rinckel (U.S. Pat. No. 6,141,961).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Loren C. Edwards whose telephone number is (571) 272-2765. The examiner can normally be reached on M-TH 5:30-4.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571)272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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